



Chapter 2

Qualifications, Process and Information Requirements

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CHAPTER 2 QUALIFICATIONS, PROCESS AND INFORMATION REQUIREMENTS

INTRODUCTION

2 PURPOSE

The purpose of this section is to outline the requirements of designers and construction contractors involved in the design and construction of infrastructure assets and to provide an overview of the approval and authorisation process of the Information and data requirements, relating to the design and construction of new infrastructure and assets.

2.1 Requirements for Professional Qualifications and Experience

This section sets out the minimum qualifications of those involved in the design and construction of infrastructure and assets.

2.1.1 Qualifications and Experience

- 2.1.1.1 The Council requires all design, construction and construction supervision of infrastructural assets and subdivision works to be performed by suitably qualified and experienced individuals.
- 2.1.1.2 Contractors must hold a minimum relevant qualification and training for the proposed design or works in accordance with the Training Requirements Schedule see Table 2-1.
- 2.1.1.3 Contractors must be suitably experienced in the field of work to be undertaken. The Council will request a schedule of qualifications in support of this in advance of any work being undertaken. A Health and Safety training qualification will be a mandatory requirement for all contractors working on existing or future Council infrastructure.

2.2 Infrastructure Development Process

This section sets out the expectations for the process of design and plan preparation and an overview of the approval process. Appendix A shows an overview of the design drawing and as-built drawing approval process.

Mandatory Matters

2.2.1 General

- 2.2.1.1 The Council standards, as set out in this document, are intended to reflect the minimum standard required by the Council and should not be seen as a replacement for professional engineering design.
- 2.2.1.2 The responsibility for site-specific design relies solely on the Designer of the work and this may include investigation of unusual site conditions and exceptional circumstances. The Designer will consider all risks to lifeline systems (significant infrastructure) in the event of a major natural hazard, including but not limited to earthquake, flood, tsunami, slope failure, erosion or inundation, including the effects of climate change.

- 2.2.1.3 At the Design Drawing approval stage, the Designer is required to complete and submit a Designer's Certificate and Check Sheet with the Design Drawings (see Appendix B and Appendix C of this section) together with the Designer's details on the plan title block.
- 2.2.1.4 At the as-built stage, the Developer's Professional Advisor (DPA) is required to certify that the work has been completed in accordance with sound engineering practice and as shown in the as-built information supplied.
- 2.2.1.5 Contractors who intend to work on the Council's live water reticulation will only be permitted to do so if they are authorised by the Council and have submitted the appropriate application and gained approval.

Table 2-1 Training Requirements Schedule

NZQA Qualification Level	National Certificate Minimum Level of Qualification required	Contractor Role	Type of Works
5	Company Owner, Contractor and/or Project Manager/Contractor's Engineer.	One individual employee of the company undertaking the works will be appointed as the 'Project Manager or Contractor's Engineer' in charge of the construction as direct reports for sites of sufficient size and complexity as determined by the Council.	Construction of the Council assets or construction of assets to be vested in the Council. Multiple sites involving multiple disciplines of work.
4	Supervisor	One individual employee onsite will be appointed as the 'Supervisor' and be charged with supervising the construction for the duration of works for sites of sufficient size and complexity as determined by the Council.	Construction of the Council assets or construction of assets to be vested in the Council. Individual sites involving multiple disciplines of work.
4	Technical	Primary individual employee responsible on site for undertaking the technical works must have a relevant qualification relating to task being carried out.	Construction of the Council assets or construction of assets to be vested in the Council. Individual sites involving individual disciplines of work.
3 or demonstrates equivalent ability.	Operator	Primary individual employee responsible on site for undertaking the technical works must have a relevant qualification relating to task being carried out.	Minor utility works, minor excavation works, non-vested works.

Notes:

- 1) Similar non NZQA qualifications may be used as an alternative with the Council approval.
- 2) Expired qualifications to be recognised if the graduate profile meets the requirements of the works.
- 3) The Council retains the right to grant exceptions to the above matrix based upon extent and scale of works.
- 4) The Council retains the right to audit contractor personnel and their qualifications prior to contract award, prior to commencement of works and at any time throughout the duration of works.
- 5) Specific levels and training required are to be communicated by council in tender and contract documents.
- 6) Higher qualifications supersede lower levels eg, if the Supervisor has Level 5 Contract Management, they do not require Level 4 Supervision.

2.2.2 Preliminary Discussion and Design

The Council encourages Designers and the Developers Principal Advisor (DPA) to meet with the Council in the early stages of design to discuss any proposed works and how these will meet the Council's standards and integrate with existing services and infrastructure. Information on how to obtain pre-application advice is available on the Councils' websites or by contacting the Council.

Prior to approval to commence work, the Council requires the submission of fully detailed Design Drawings covering the design of all new roads, rights-of-way, access lots and service utilities. These drawings and associated information will be reviewed by the Council and assessed against the requirements in this document.

2.2.3 Review and Acceptance of Design Drawings and Supporting Information

2.2.3.1 Design Drawings and supporting information must be submitted to and approved by the Council prior to the commencement of physical works, and prior to the pre-construction meeting.

2.2.3.2 For large subdivisions, full Design Drawings may be required by the Council prior to subdivision consent being granted.

2.2.3.3 The requirements of the Design Drawings and supporting information are described in Sections 2.2.15 and 2.4.

2.2.3.4 The Council will review the Design Drawings and supporting information and advise the applicant in writing of either:

- a) Acceptance of the Design Drawings, and supporting information; or
- b) A request to modify the design and/or provide further information.

2.2.3.5 Acceptance of the Design Drawings and supporting information will consist of a single copy of each of the Drawings, endorsed with the signature of the Engineering Manager or his/her approved representative.

2.2.4 Construction by Stages

2.2.4.1 Where the landowner proposes to proceed with construction of a subdivision in more than one stage, the Design Drawings will cover the whole scheme in the first instance.

2.2.4.2 In the case of major staged subdivisions where the Council's infrastructure is involved, the Council, at its sole discretion, may relax this requirement to the extent that preliminary service layout drawings for the total project may be submitted for initial approval.

2.2.4.3 Fully detailed Design Drawings required for each particular stage will subsequently be submitted for final approval.

2.2.4.4 Design Drawings for each stage will comply with the applicable Land Development Manual at the time of the subdivision consent approval; however, should an extension of time for the consent be granted, compliance with the current Land Development Manual at the time of extension may be required.

2.2.5 Neighbours' Consent

2.2.5.1 Where any construction work is required on another property, written evidence of the owner's consent is required.

2.2.5.2 The Council will need to view any easement document at the as-built plan stage to secure legal access over the affected land.

2.2.6 Notification of Contracts and Phases of Work

2.2.6.1 At least five working days prior to the commencement of work the consent holder or their agent will advise the Engineering Manager in writing of the following information:

- a) The name(s), addresses and contact telephone numbers of contractor(s) to whom it is proposed to award the work;
- b) The nature of the work to be awarded in each case; and
- c) The date that work will commence.

2.2.7 Pre-construction Meeting

2.2.7.1 Where there are assets to vest in the Council, the Developer will arrange a formal pre-construction meeting (with a written agenda) at the Council's offices with the DPA, contractor's site representative, the Engineering Manager or their representative and the Manager Resource Consents/Compliance or their representative.

2.2.7.2 This meeting will occur prior to the commencement of any work and after approval of the Design Drawings and will include discussion of the programme of works, the inspections required by the Council or their agents and any other relevant matters.

2.2.7.3 Specifically, matters to be discussed at this meeting will include:

- a) Type/size of work contemplated and methodology;
- b) Soil types, ground, environmental and weather conditions;
- c) Erosion and sediment control requirements;
- d) Locality of site;
- e) Consent conditions;
- f) Hold points and inspections required by the Council;
- g) Traffic effects, corridor access requests and effects to neighbours;
- h) Risk to adjacent services;
- i) Health and Safety;
- j) Relevant experience/training of the Contractor(s);
- k) Relevant experience of the Designer(s) and the DPA and level of construction supervision;
- l) The potential for accidental discovery of artefacts of cultural heritage significance, and the need for a cultural heritage monitor in accordance with the Heritage New Zealand Pouhere Taonga Act 2014.

2.2.7.4 The Designer/DPA will bring to the pre-construction meeting:

- a) A construction programme;
- b) A full set of approved Engineering Drawings;
- c) The construction specification;
- d) An outline of the proposed construction supervision approach;
- e) Detail of proposed sediment and erosion controls; and,
- f) Any relevant information on how risks, environmental compliance and consent compliance are going to be managed.

2.2.7.5 A letter outlining minutes of the meeting, agreed hold points and the inspection regime will be prepared and distributed by the Council within two working days after the meeting.

2.2.7.6 Site monitoring is at the discretion of the Council, based on the significance and scale of the project and associated risks, and will be discussed at the preconstruction meeting with the Designer/DPA.

2.2.8 Commencement of Development Works

2.2.8.1 Work will not commence on the engineering construction of the subdivision or development unless:

- a) The Council has granted an appropriate resource consent;
- b) There are no outstanding appeals or rights of appeal to the Environment Court;
- c) The Council has approved the Design Drawings, specifications and calculations for the specific work that is required;
- d) The Council has approved the Traffic Management Plan (TMP) (if required);
- e) The Council has approved the Erosion and Sediment Control Plan (ESCP) if required;
- f) All other necessary consents or permits (e.g. corridor access request, building consent) have been obtained; and,
- g) The pre-construction meeting has been held, where appropriate.

2.2.8.2 The Council may grant staged approval to allow earthworks to commence prior to approval of other works at his/her sole discretion, provided that suitable erosion and sediment controls have been implemented, as per the approved Erosion and Sediment Control Plan (ESCP).

2.2.8.3 The Consent holder should be aware that in some cases, the Environment Court has ruled that works must not proceed without the Court's consent in cases where an appeal is lodged against consent conditions and has not been heard, or a right of appeal to the Court still exists, such as in the case of an objection lodged with the Council and still unheard.

2.2.8.4 Work must cease in the event of accidental discovery of archaeological artefacts, in accordance with the Heritage New Zealand Pouhere Taonga Act 2014. An authority must be obtained from Heritage New Zealand (Pouhere Taonga) to modify, damage or destroy a cultural heritage site.

2.2.9 Documentation to be Held

2.2.9.1 Throughout the construction period, the Contractor's site representative will have the following material on site at all times:

- a) Signed copies of the approved Design Drawings and the initial letter from the Council setting out hold points, the inspection regime and engineering administration matters;

- b) A verified Health and Safety Plan and the letter of verification;
- c) Copies of the resource consent;
- d) Copies of any of the Council consents or permits necessary for the works;
- e) Signed copies of all consents to enter land for construction for works on land not owned by the Developer;
- f) Approved plans and details of the sedimentation and erosion control plan to be implemented; and,
- g) An approved traffic management plan from the road controlling authority.

2.2.10 Variations

2.2.10.1 No variations from the approved Design Drawings will be made without the proposed amendments being first submitted to, and approved by, the Council.

2.2.10.2 The Designer will identify and fully document the nature and position of the amendments.

2.2.10.3 In the case of emergencies where immediate action is required to safeguard safety and health, property and infrastructure assets, such action will be taken. At the earliest opportunity after the event, the Council will be notified for approval.

2.2.11 Council Inspections and Construction Hold Points

2.2.11.1 The DPA will notify the Council at least five working days (or as mutually agreed) before any of the following phases of the work are reached (and such other phases as have been determined), to enable inspection to be carried out by the Engineering Manager or representative:

- a) Earthworks starting (for checking of erosion and sediment control measures);
- b) Street Works:
 - i) Subgrade preparation and subsoil drains;
 - ii) Base course prior to sealing;
 - iii) Foot path and kerbside prior to sealing or concreting.
- c) Stormwater and Wastewater:
 - i) Inspection of laying first pipes of pipeline in subdivision while there is work in progress;
 - ii) Inspections at a series of hold points determined by the Engineering Manager or representative to suit the particular situation and level of monitoring
- d) Water Supply:
 - i) Inspection of each line prior to backfill and trench reinstatement, including pressure testing;
 - ii) Chlorination; and
 - iii) Connection by the Council required.
- e) Final:
 - i) After completion of all works including, sweeping of roads and channels, clearing all drains, manholes and sumps, checking all valve and hydrant operations, planting riparian areas and appropriate inspections, eg. CCTV, gauging or any other testing as required by the Council as appropriate.

Note:

- 1) *The certification by the Developer's Professional Advisor of the works at the various stages identified in section 2.2.11;*
- 2) *The Council reserves the right to determine the inspection/monitoring regime on each project and the testing method of services/infrastructure which is appropriate.*

2.2.12 Completion Certificate and Supply of As-built Drawings

- 2.2.12.1 Where requested by the Council a preliminary as-built plan may be required, prior to approval of the survey plan, in order to confirm that the services covered by easements are positioned and aligned correctly within those easements.
- 2.2.12.2 On completion of the construction of a subdivision or development the DPA being a Chartered Professional Engineer or Registered Professional Surveyor, will submit to the Council a Completion Certificate that the work has been constructed in accordance with:
- a) This Nelson Tasman Land Development Manual;
 - b) The accepted Design Drawings and specifications;
 - c) Any resource consent conditions;
 - d) Any accepted amendments; and
 - e) Manufacturer's instructions.
- 2.2.12.3 The "Certifier" may be required to provide sufficient evidence at the written request of the Council to demonstrate to the Council's satisfaction that they have experience and competence in the work they are certifying, that they have sufficient professional indemnity insurance and run-off cover, and they have sufficient documented observation and testing records to adequately certify the works.
- 2.2.12.4 The Works Completion Certificate will be accompanied by as-built drawings, showing all works as actually constructed, and drawn to the drawing standards specified by the Council in Sections 2.4 and 2.5.
- 2.2.12.5 The Works Completion Certificate will be in the form as shown in Appendix D and must be received by the Council before it decides whether to issue a certificate under Section 224(c) of the Resource Management Act.

2.2.13 Acceptance of As-Built Plans

- 2.2.13.1 When the as-built plans and data are ready for approval and signing by the Engineering Manager, the DPA will submit them in the format described in Table 2-2.
- 2.2.13.2 The DPA is responsible for collecting and documenting information set out in the as-built plans. Disclaimers or endorsement negating responsibility will render the plans unacceptable and the 224 Certificate will be withheld. Further, if underground asset locations are found to be inaccurate on excavation or otherwise, the Developer may be liable for rectifying the situation.

2.2.14 Maintenance Certificate

- 2.2.14.1 On expiry of the 24-month maintenance period, the DPA will issue a maintenance certificate confirming that all outstanding maintenance has been completed.

2.2.14.2 The performance bond for maintenance will not be released by the Council until the work covered by the maintenance certificate is verified by the Council.

2.2.15 Phases and Information Requirements

Table 2-2 provides an outline of the information required at various phases of the approval process

Table 2-2 The Council's Requirements

Information/Data Required	Engineering Acceptance (Prior to construction)	Approval Phase	
		223 submission	224 submission
Design drawings /Plans	✓	✓ Amendments only	✗
Design specifications / Calculations	✓	✓ Amendments only	✗
Design Certificates / Reports	✓	✓ Amendments only	✗
Preliminary As-built Plans	✗	✓ Easement Layout only	✗
As-built Plans	✗	✗	✓
As-built coordinate and attribute data	✗	✗	✓
Construction certificates	✗	✗	✓
Operations and maintenance manuals	✗	✗	✓

2.3 Information and Data Requirements

Introduction

Accurate asset information is crucial to efficient and cost-effective operation, management, maintenance and knowledge of the Council's infrastructure assets. This section sets out the requirements for providing Design and As-built Plans, Information and Data.

Note:

"Tasman District Council is undertaking a review of its asset management data requirements. Once that review is completed a revised As-built Data Standard will be published separate from this Land Development Manual (LDM) and it will supersede the As-built requirements outlined in this manual. This manual will be amended to require Developers to comply with the newly published As-built Standard."

Mandatory Matters

2.3.1 General

- 2.3.1.1 The Council requires accurate and complete Design and As-Built information to be supplied for all infrastructural development or improvement works where:
- a) Infrastructure is intended to be transferred into the Council ownership;
 - b) Privately owned infrastructure is intended to be connected to the Council owned asset at the request of the Council;
 - c) Infrastructure is constructed as part of a capital works project or contract on behalf of the Council;
 - d) Infrastructure is upgraded or maintained on behalf of the Council through approved maintenance work.
- 2.3.1.2 Design and as-built information is required for all works relating to:
- a) Roading; including street lighting, road marking and signage
 - b) Rights-of-way;
 - c) Stormwater network infrastructure;
 - d) Wastewater network infrastructure
 - e) Watermains; and
 - f) Drains of 150mm equivalent diameter or greater
- 2.3.1.3 Design Information includes, but is not limited to:
- a) Design Drawings and Plans;
 - b) Design / Engineering specifications;
 - c) Design / Engineering calculations;
 - d) Certificates and reports.
- 2.3.1.4 As-built information Includes but is not limited to:
- a) As-built plans;
 - b) Coordinate data;
 - c) Asset attribute data;
 - d) Operation / Maintenance Manuals.

2.3.2 Media and Format

All plans, drawings and support information will be submitted in electronic format acceptable to the Council and in accordance with Table 2-3. Hardcopy plans, or data will not be accepted.

Table 2-3 Acceptable Format

Information Type	Acceptable Format (In preference order)
Design Drawing / Plan Specification	PDF
Design Specification	PDF Microsoft Excel Spreadsheet
Design/Engineering Calculation	PDF Microsoft Excel Spreadsheet
Operations and maintenance Manuals	PDF Microsoft Word Microsoft Excel
As-built Drawing /Plan	Single multi-page PDF
As-built Coordinate and Attribute data	Esri Shape file Microsoft Excel Spreadsheet Comma separated values (CSV) file Delimited Text file <i>DXF and DWG files may be accepted where provided in addition to the requirements above i.e. included with the PDF file and attribute data</i>

2.3.2.1 Hand drawn plans or plans with any hand drawn mark-ups or edits will not be accepted.

2.3.2.2 Plans will not contain any linked or embedded objects e.g. Excel spread sheets “copy and pasted” into the drawing file.

2.3.2.3 External referencing to image and other DWG files is acceptable as long as the referenced file is supplied with the data.

2.3.3 File Structure

2.3.3.1 Plans will be submitted as a complete set contained in a single file. (Multi-page PDF with a page per sheet).

2.3.3.2 Each service plan will be drawn as a separate sheet within the plan series i.e. a separate sheet for:

- a) Roading – including ROW, streetlights road marking and signage;
- b) Potable Water supply;
- c) Stormwater – including open drains of 150mm equivalent diameter or greater;
- d) Wastewater.

2.3.3.3 Sheets within a Plan will be numbered sequentially starting with sheet 1 and referencing the total number of sheets in the plan series e.g. “Sheet 1 of 10”.

2.3.3.4 Where more than five sheets are involved a title sheet will be included showing sheet numbers, individual sheet titles and site location plan.

2.3.3.5 A site location, in the form of a locality plan, including major street names and site identification will be shown.

2.3.3.6 As-built coordinate and attribute data must be provided at the same time the as built plans are submitted.

2.3.4 Layout

2.3.4.1 Plan layout will comply with AS1100.101 and have the following including title blocks to show:

- a) The project name;
- b) The appropriate resource consent number;
- c) The plan type and service/utility type e.g. 'AS-BUILT STORMWATER NETWORK';
- d) Plan numbering and revisions and date signed;
- e) Datum reference;
- f) North indicator;
- g) Scale and legend;
- h) Name of contractor and contact details.

2.3.5 Orientation of Plans and Sections

2.3.5.1 Plans will be orientated with either north or west to the top of the sheet. North point will always be shown.

2.3.5.2 In the case where a layout plan and longitudinal section appear on one sheet, the layout plan is to be orientated to suit the longitudinal section.

2.3.5.3 Plans and longitudinal sections will have the lowest distance on the left-hand side of the sheet. In drainage longitudinal sections, the lowest end of the drain will be at the lower distance and the plan should be orientated correspondingly.

2.3.5.4 Cross-sections of a street will commence at the bottom left hand corner of the sheet and proceed upwards where this is possible.

2.3.5.5 The symbols and arrangements will be as per AS1100.101.

2.3.5.6 Existing property boundary lines that abut the work and a north point will be shown as a reference.

2.3.5.7 Stormwater open channel cross-sections will be viewed looking downstream so that the true right bank is on the right-hand side.

2.3.6 Size and Scale

2.3.6.1 Plan scale will comply with AS1100.101.

2.3.6.2 Plans and drawings should preferably be produced at A3 paper size.

2.3.6.3 A1 plans may be accepted provided they can be reproduced at A3 paper size without loss of clarity or legibility. Where A1 plans cannot be reproduced at A3 without loss of clarity the Council may request a hardcopy version.

2.3.6.4 Text on an A1 full-sized plan reproduced on A3 will be a minimum of 1.25mm.

2.3.6.5 Text on plans will not obscure any line work.

2.3.7 Coordinate System, Datum and Accuracy

2.3.7.1 All plans will be provided in New Zealand GD 2000 Nelson Circuit or NZTM projection.

2.3.7.2 X and Y coordinates (Northing and Easting) will be recorded to two decimal places and accurate to ± 30 mm.

2.3.7.3 Vertical levels will be surveyed to New Zealand Vertical Datum 2016 (NZVD 2016) and recorded in metres. See Appendix E for Nelson and Tasman Vertical datum heights relative to NZVD 2016.

2.3.7.4 Vertical Accuracy (Z coordinates) will be recorded to two decimal places and accurate to ± 30 mm.

2.3.7.5 The map projection and Datum used must be stated on all plans.

2.3.7.6 The origin of levels will be recorded and accurate to two decimal places, for example "Origin of levels BP11 SO12345 = 4.26 NZVD2016.

2.4 Design Drawings

Mandatory Matters

2.4.1 General

2.4.1.1 Each and every plan must be signed by the Designer of the work. The Designer's signature is taken as evidence that the plans have been checked against and comply with the Nelson Tasman Land Development Manual. Unsigned plans will not be accepted.

2.4.1.2 For large subdivisions, full Design Drawings may be required by the Council prior to subdivision consent being granted.

2.4.1.3 The following plans and drawings of each street are required showing:

- a) Proposed and existing survey lots and Land Transfer (LT) numbers (if known);
- b) Street numbers;
- c) Names of new streets; and
- d) The location of services, including the necessary manholes, fittings and similar features (on separate plans for each service).

2.4.1.4 New services will be located as per AS1100.101, generally along with bench marks and survey mark levels.

2.4.1.5 The Designer will make every endeavour to locate existing power and telecommunication services.

2.4.1.6 Where proposed pipes cross under or over existing or proposed services, these services will be shown on the plan and section with reduced levels.

2.4.1.7 Plans will show the location of services in existing streets which abut the subdivisions.

2.4.1.8 A Traffic Management Plan is required by the Council for any work on or immediately adjacent to a public road for works that will or may pose a risk to road users. The Council requires demonstration

that the consent holder and agents are in compliance with requirements of the Health and Safety at Work Act 2015.

2.4.2 Earthworks Design Drawings

2.4.2.1 Earthworks drawings will be provided and must show:

- a) Original and finished contours;
- b) Proposed earthworks (cut and fill);
- c) Erosion and sedimentation control, including any staging;
- d) Geotechnical engineers input;
- e) Water bodies and drainage; and
- f) Property boundaries, kerb lines and street names.

2.4.2.2 A contour plan of the site at an appropriate interval in terms of the Council Datum NZVD2016 will be provided for all subdivisions and developments of 0.25 hectares or greater.

2.4.2.3 Data provided as a drawing file for the purposes of generating contour data, will be provided as 3D lines and 3D points to NZVD2016.

2.4.2.4 Erosion and sediment control must be shown in detail at the Engineering Drawing approval stage.

2.4.2.5 Information relating to contamination or potential contamination of the land will be submitted in accordance with National Environmental Standards for Contaminated Sites.

2.4.3 Road/Street Works Design Drawings

2.4.3.1 A road/street works plan will be provided and show:

- a) Property boundaries;
- b) Kerbs and channels;
- c) Road/street names;
- d) Footpaths;
- e) Longitudinal and cross sections of the existing ground;
- f) Proposed road/street levels with batters;
- g) Secondary flow paths and depth of ponding;
- h) Existing and proposed survey bench marks;
- i) Street trees and street gardens;
- j) Road marking; and
- k) Signs (where relevant).

2.4.3.2 Left-hand and right-hand top of kerb will be shown separately unless they are identical, in which case this will be stated.

2.4.3.3 The levels of the proposed services will also be shown on sections. Longitudinal sections will extend 40.0m beyond the extent of the works.

2.4.4 Wastewater Design Drawings

2.4.4.1 Wastewater services drawings will be provided and show:

- a) Wastewater pipes and manholes (in plan and long-section);
- b) Pipe size, length and gradient in long section;
- c) Pump stations;
- d) Stormwater pipes and manholes (for proximity purposes, with a thick line for wastewater and thin line for stormwater);
- e) Property boundaries, kerb lines and road/street names; and
- f) Wastewater discharge calculations complying with the NTLDM (please refer to Chapter 6 of the NTLDM).

2.4.5 Stormwater Design Drawings

2.4.5.1 Stormwater services drawings will be provided and show:

- a) Property boundaries;
- b) Waterways, streams, ponds, retention and detention devices, stormwater pipes, channels, subsoil drains, manholes and structures (in plan and long-section), pipe size, length and gradient in long section;
- c) Secondary flow paths, greenways and proposed easements;
- d) Wastewater pipes and manholes (for proximity purposes, with a thick line for stormwater and thin line for wastewater); and
- e) Property boundaries, kerb lines and road/street names.

2.4.5.2 Stormwater drawings submitted for checking will be accompanied by:

- a) Catchment plans showing all the catchment areas to be served; and
- b) Stormwater discharge calculations for each and every proposed pipe and channel.

2.4.6 Water Supply Design Drawings

2.4.6.1 Water supply services drawings will be provided and show:

- a) Water main and fittings;
- b) Pump stations, and
- c) Property boundaries, kerb lines and road/street names.

2.4.7 Street lighting, Power and Telecommunication Utilities Design Drawings

2.4.7.1 Street lighting, power and telecommunication utilities drawings will be provided and show:

- a) Cables ducts, boxes, pillars, cabinets and substations;
- b) Street lighting; and
- c) Property boundaries, kerb lines, vehicle and pedestrian entrances and road/street names.

2.4.7.2 Power, street lighting plans may be submitted separately to the Council as these are designed by specialists other than the DPA.

2.5 As-built Plans and Data

Mandatory Matters

2.5.1 General

- 2.5.1.1 As-built plans and all associated coordinate and attribute data must be submitted together as a single data package.
- 2.5.1.2 As-built plans will be signed and certified as correct and accurate by a licenced Cadastral surveyor or Chartered professional engineer
- 2.5.1.3 As-built plans will be provided and approved before the 223 certificate can be issued.
- 2.5.1.4 For the Council's physical works contracts, as-built drawings are required prior to issue of the Practical Completion certificate or within an agreed timeframe with the Engineering Manager's approval.
- 2.5.1.5 All non-standard structures (e.g. pump stations, reservoirs, bridges, and low impact stormwater devices) will be shown as an outline and all lids and surface openings will be shown and separately located. The position of all pipe connections to a structure will also be located with coordinates and invert.

2.5.2 As-built Quality

- 2.5.2.1 It is the responsibility of the parties providing as-built information to ensure the accuracy and quality of as-built information and to ensure compliance with the requirements in this document.
- 2.5.2.2 In the event of as-built data being incorrect the Council may decline to accept the application.
- 2.5.2.3 The Councils' receipt and acceptance of as-built information does not absolve those parties providing it of any responsibility for their accuracy or authenticity.
- 2.5.2.4 Where errors are found within the as-built information, the Council may require correction of those errors by the information provider.

2.5.3 As- built Coordinate and Attribute Data

- 2.5.3.1 The data supplied must be a complete and accurate representation of the assets, coordinates, levels and attributes shown on the associated as-built drawings.
- 2.5.3.2 A separate tabulation of all the point coordinates and levels specified in these standards will be shown on the drawing set as a cross-referenced table.
- 2.5.3.3 The file must be capable of being processed with one of the Council's current compatible systems and each point (coordinated location) will appear on a separate line.
- 2.5.3.4 Each point (excluding contouring spot heights) will be cross-referenced to a point on the as-built plans to clearly indicate the one that it represents.
- 2.5.3.5 The following format for each point (coordinated location) will apply:
 - a) Cross reference to location as shown on the plan;

- b) Easting;
 - c) Northing;
 - d) Level (0.0 if not supplied);
 - e) Invert (0.0 if not supplied); and
 - f) Description as applicable;
- e.g. for a simple text “comma” separated file:
- g) MH3a,2530000.58,5930000.64,14.53,10.25, Sewer Manhole;
 - h) SMP3,2530010.63,5930005.62,15.98,10.25, Sump;
 - i) MH4a,2530020.58,5930015.24,14.89,10.55,Sewer Manhole.

e.g. for a simple table or spread sheet file:

MH3a	2530000.58	5930000.64	14.53	10.25	Sewer Manhole
SMP3	2530010.63	5930005.62	15.98	10.25	Sump
MH4a	2530020.58	5930015.24	14.89	10.55	Sewer Manhole

2.5.4 Coordinate and Elevation Standards

2.5.4.1 Easting and Northing coordinates will be accurate to two decimal places and in terms of the following (in order of preference):

- a) New Zealand Transverse Mercator (NZTM);
- b) Local Circuit (NZGD) 2000;
- c) The local circuit origin will be stated on all plans;
- d) The map projection or coordinate system used must be stated on all plans;
- e) The origin of levels will be recorded to two decimal places, for example “Origin of levels BP11 SO12345 = 4.26 NZVD2016”;
- f) Known benchmarks and survey levels are recorded by the Council and are available from our regional GIS website Top of the South Maps www.topofthesouthmaps.co.nz or the LINZ website

2.5.5 Survey Datum

2.5.5.1 The levels shown on all plans must be surveyed to NZVD 2016.

2.5.5.2 The datum used must be stated on all plans.

2.5.6 Earthworks As-built Drawings

2.5.6.1 Where bulk earthworks have been carried out, sufficient additional levels, coordinates and break lines to regenerate contours on earthworks plans at 1.0m intervals will be provided. The contours are to be shown on an appropriate as-built plan.

2.5.6.2 Ground level in terms of the datum NZVD2016 will be shown on an appropriate plan at all boundary pegs for all subdivisions regardless of size.

2.5.6.3 Subsoil drains will be shown on as-built plans in terms of coordinates and invert level at all changes in direction and grade and inspection/monitoring points.

2.5.7 Road/Street Works As-built Drawings

2.5.7.1 In addition to the road/street works design drawing requirements, as-built plans will show:

- a) All kerbing (including traffic islands/traffic calming), channels where separate from kerb, or edge of seal or formed carriageway in the absence of kerbing;
- b) Points will be located at top of kerb, centre of channel or edge of seal and in terms of coordinates and level at changes of type, direction or grade;
- c) All curves are to be located using the tangent points and at least one central point on each curve;
- d) The location and width of footpaths. Locations in terms of coordinates are preferred but are acceptable in terms of offset from boundaries or kerb;
- e) The location of street trees and the area of street gardens. Locations in terms of coordinates are preferred but are acceptable in terms of offset from boundaries or kerb.

2.5.7.2 Road signs, including type, size, location and coordinates.

2.5.7.3 Road markings in terms of colour, width, symbol type or text and coordinates. Coordinates will be positioned at ends and changes of type and/or direction. All curves are to be positioned using the tangent points and at least one central point on each curve. Offsets from the front face of kerb and channel will be acceptable. Road marking symbols need only be positioned to their centres.

2.5.7.4 Bridge abutments, piers, carriageway, kerbing and footpaths in terms of outline coordinates and level, as per above specifications.

2.5.7.5 New or altered benchmarks and survey standards in terms of coordinates and level in terms of datum NZVD2016. The points will be clearly defined as either the Councils' bench mark (Council Ownership) or survey standard (LINZ ownership) and will be levelled/coordinated back to known benchmarks or reference points. The work must be undertaken in accordance with LINZ requirements.

2.5.7.6 Any road/street works removed or relocated will be noted on the plans to the same level of detail as new assets.

Note:

Further road construction information, such as the Road Assessment and Maintenance Management System (RAMM) data, as required on the standard form (see Chapter 4, Transportation, Appendix A) and the Streetlight Data Collection Form (see Chapter 9, Electrical and Streetlight, Appendix A) will be provided where applicable.

2.5.8 Wastewater As-built Drawings

2.5.8.1 In addition to the wastewater design drawing requirements, as-built plans will show:

- a) Material, class and size (diameter, or height and width) and date installed for all assets;
- b) Manholes, rodding points and formed bends in terms of coordinates, lid level, invert level and size and dimensions to lot boundaries where structures are not within a road or ROW pavement area;

- c) Pump stations, non-standard manholes, underground chambers, storage tanks, intake structures and outlet structures in terms of outline and pipe connection coordinates. Including invert levels on all chambers, storage tanks, wet wells, intakes and outlet points;
- d) Upstream and downstream invert levels on each length of pipeline. At drop manholes the invert is required for both the upper and the lower level entry point;
- e) Any change in direction, grade or type not located by the above information is to be defined in terms of coordinates and invert level;
- f) The blank end of pipe laterals or connection point to existing house drains. These will be in terms of coordinates and reduced level, depth to the blank end from the final ground level and distance from two readily defined permanent points (usually boundary pegs);
- g) Junction of laterals to mains in terms of coordinates or running distances along mains between surface features.

2.5.9 Stormwater As-built Drawings

2.5.9.1 In addition to the stormwater design drawing requirements, as-built plans will show:

- a) Material, class and size (diameter, or height and width) and date installed for all assets;
- b) Manholes, sumps and rodding points in terms of coordinates, lid level, invert level and size and dimensions to lot boundaries where structures are not within a road or row pavement area;
- c) Low impact or water sensitive design stormwater devices, including multi-functional greenways, detention basins, detention ponds, detention tanks, rain gardens, vegetated swales, soakage structures, filter strips, sand filters in terms of outline;
- d) Pump stations, non-standard manholes, underground chambers, storage tanks, intake structures and outlet structures in terms of outline and pipe connection coordinates. Including invert levels on all chambers, storage tanks, wet wells and intake and outlet points;
- e) Upstream and downstream invert levels of each length of pipeline (at node points). At drop manholes the invert is required for both the upper and the lower level entry point;
- f) Any change in direction, grade or type not located by the above information is to be defined in terms of coordinates and invert level;
- g) The blank end of pipe laterals or connection points to existing house drains in terms of depth to the blank end from the final ground level and measurements from two readily defined permanent points, usually boundary pegs, and as coordinates and reduced level;
- h) Junction of laterals to mains in terms of coordinates or running distances along mains between surface features.
- i) Subsoil drains in terms of coordinates and invert level at all changes in direction and grade and inspection/monitoring points;
- j) Watercourses, streams, rivers and secondary flow paths are to be defined by coordinates and levels at the centre line of water course and the top and bottom of both banks;
- k) Detention structures (inlet, outlet, spillway, dam crest) are to be specifically surveyed in terms of coordinates and level. Reservoir areas are to be defined by 0.2m contour data to maximum operating level.

- 2.5.9.2 An Operation and Maintenance Manual (electronic copy) is required for all detention dam structures. This manual will include key design parameters (such as reservoir catchment areas, inflows and reservoir and spillway operation) and ongoing maintenance and dam safety inspection requirements.
- 2.5.9.3 Operation and maintenance information may be required for non-standard stormwater components (such as water treatment devices, ponds, wetlands or swales). This information would include any special maintenance or servicing requirements.

2.5.10 Water As-built Drawings

- 2.5.10.1 In addition to the water supply design drawing requirements, as-built plans will show:
- Material, class, type and size (diameter, or height and width) and date installed for all assets;
 - Valves and hydrants in terms of coordinates and lid level size and dimensions to lot boundaries;
 - Meter boxes in terms of coordinates and lid level and by distance to two adjoining boundary pegs. In addition, the meter number and meter reading information is required. Refer to Chapter 7 - Water, Appendix A;
 - Ferrule connections in terms of coordinates;
 - Manholes in terms of coordinates, lid level size, invert level and dimensions to lot boundaries;
 - Water mains and rider mains, in terms of coordinates at any change in horizontal direction or material or type or diameter. Curves are to be located either using the tangent points and at least one central point on each curve or points at regular intervals;
 - Pump stations, storage tanks, reservoirs, chambers and non-standard manholes in terms of outline, pipe connection and lid coordinates, lid level and pipe connection inverts as well as floor and overflow levels;
 - Any horizontal change in direction or type not covered by the above information is to be defined in terms of coordinates. Curves are to be located using the tangent points and at least one central point on each curve. Offsets from the front face of kerb and channel may be acceptable;
 - Junctions of laterals to mains in terms of coordinates or running distances along mains between surface features.

2.5.11 Pump Stations and other Electrical Equipment

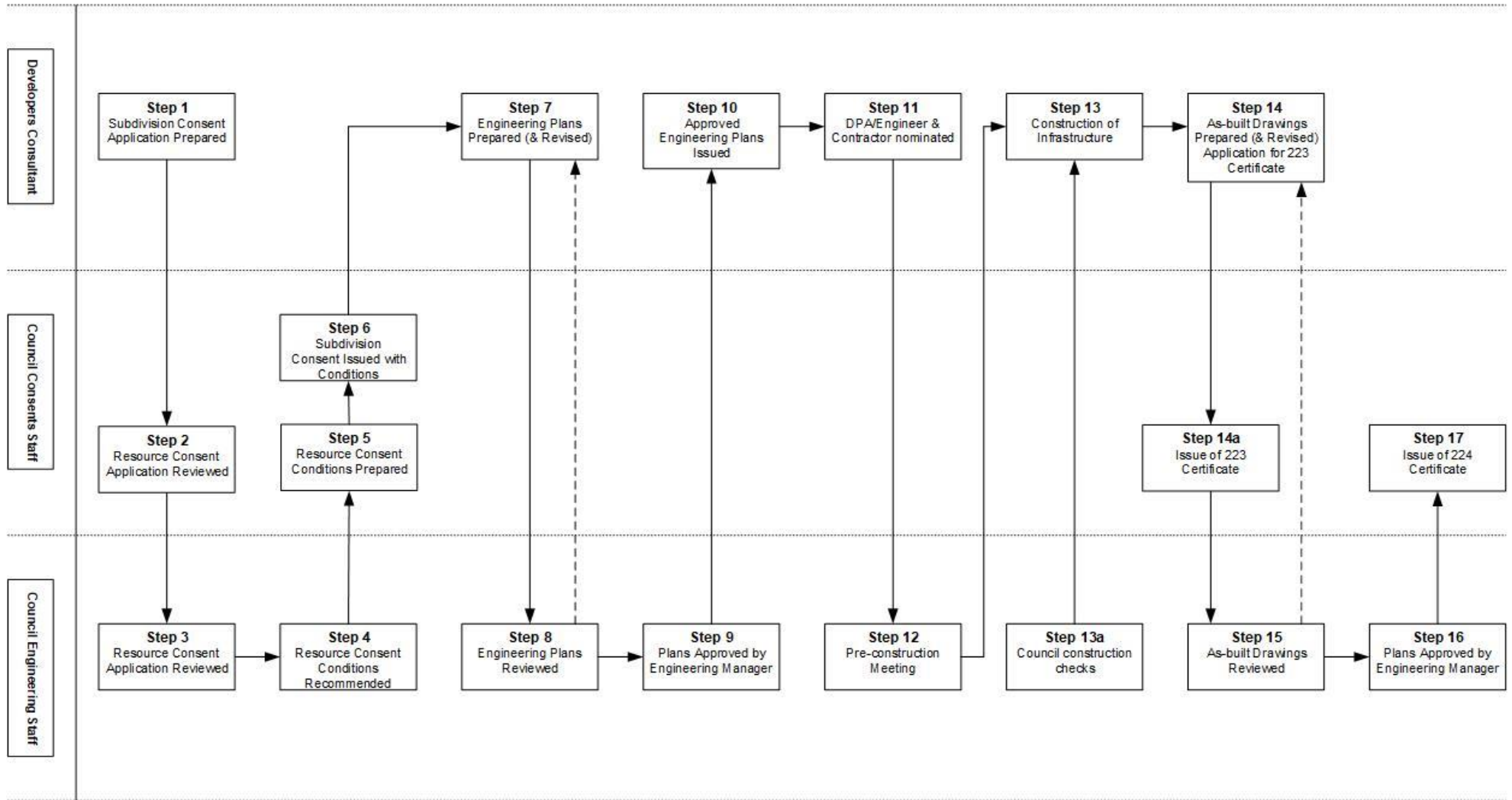
- 2.5.11.1 Details of any reservoir, pump, motor components, automated valve and electrical control equipment will be incorporated in a manual for the site, which is to include all manufacturer supplied data for equipment used, wiring diagrams, control programs and any other relevant data for the site such as pipework placement diagrams, operational schematic diagrams and site drawings.
- 2.5.11.2 The manual will also include a summary of services provided to the site and the term and conditions for each service e.g. electricity supply. Where these services have been obtained by the Council, the provision of such data will be the responsibility of the respective Councils.

The master manual is to be provided in electronic form as per Table 2-3.

2.6 Other Utilities

- 2.6.1.1 Electrical, telephone and other reticulation drawings will be supplied to the relevant network line operator(s). The Council may require evidence from the relevant network line operators that the as-built plans have been received and are fit-for-purpose.
- 2.6.1.2 The Council will require an as-built plan of all road/streetlights installed and completion of the data collection form (see Chapter 9, Appendix A) which will include:
- a) Location in terms of coordinates;
 - b) Light type, dimensions, wattage and date installed.
- 2.6.1.3 In addition to new assets, as-built information will show all existing assets that have been made redundant. The assets will be marked as either “abandoned” or “removed”. Where an existing pipe or asset has been made partially redundant the coordinates and invert of the disconnection point are required.
- 2.6.1.4 The location and level of all existing drainage and water services encountered during construction will be verified and recorded on as-built plans.
- 2.6.1.5 As a minimum, at least one asset feature (such as a manhole lid and invert, valve or hydrant lid) adjacent to each new service will be surveyed and recorded on the as-built plans.

Appendix A Engineering Design Drawing and As-built Drawing Approval Process



All changes to this procedure must be agreed by the Engineering Manager and must be notified to the Council's consent team.

Appendix B Design Certificate – Land Development/Subdivision Work

ISSUED BY: _____
 (Approved certifier)

TO: _____
 (Developer/Owner)

TO BE SUPPLIED TO: _____
 (Territorial authority)

IN RESPECT OF: _____
 (Description of land development/subdivision work)

AT: _____
 (Address)

has been engaged by _____
 (Consultant/Designer) (Developer/Owner)

to provide _____ services in respect of the land development and/or subdivision work described above.

I _____ have the qualifications and experience relevant to this project as set out herein and have designed the subject works and confirm that the design is to current good engineering practice, and that it satisfies all relevant resource consent conditions, all relevant Council requirements and applicable codes and standards.

I/My practice holds professional indemnity insurance in the sum of \$ _____ and run-off cover.

(Signature of approved certifier) _____ Date _____

_____	RPSurv	<input type="checkbox"/>	CPEng	<input type="checkbox"/>
(Professional Qualifications)	Practice field			
_____	Civil	<input type="checkbox"/>	Mechanical	<input type="checkbox"/>
(Address)	Structural	<input type="checkbox"/>	Electrical	<input type="checkbox"/>
_____	Geotechnical	<input type="checkbox"/>	Industrial	<input type="checkbox"/>
	Environmental	<input type="checkbox"/>		

Outstanding Works _____

Appendix C Designer's Check Sheet

Councils' Consent No: _____

Date: _____

Site Address:		
Site Legal Description:		
Designer:	Name	
	Address	
Qualification:	Phone No:	
	Fax No:	
Engineer/Surveyor Contact:		
Landowner:	Name:	
	Address:	
	Phone No:	

Place a tick in a box if information is provided, otherwise write NA for not applicable

Reason for Submission: Subdivision R.O.W

 Development Other

Design Certificate provided

Drawing Sheet size and number of sheets A3 A2

Drawing to AS 1100.101 and LDM Section 2.2.15.

Levels to NZVD2016 Locality Diagram

Contour Plan Spot Levels

Overall Site Plan

Plans and Sections Road/street works Power

 Drainage Telecommunications

 Water Earthworks

Sewerage Catchment Plans and Discharge Calculations

Stormwater Catchment Plans and Discharge Calculations

Road/Streetworks Pavement Design

Specific Design – specify aspect:

Owner's Consent for Work in Private Property

Appendix D Certification upon completion of Subdivision Work

ISSUED BY: _____
 (Approved certifier)

TO: _____
 (Developer/Owner)

TO BE SUPPLIED TO: _____
 (Territorial authority)

IN RESPECT OF: _____
 (Description of land development/subdivision work)

AT: _____
 (Address)

has been engaged by _____
 (Consultant/Designer) (Developer/Owner)

to provide construction observation, review and certification services in respect of the above subdivisional work which is shown on the drawings numbered

Council _____ approved by _____
 (Territorial Authority)

I have sighted the _____ consent and conditions of consent to the
 (Territorial Authority)
 subdivisional works and the approved drawings.

"I believe on reasonable grounds that the works other than those outstanding works listed below, are complete and have been constructed in accordance with:

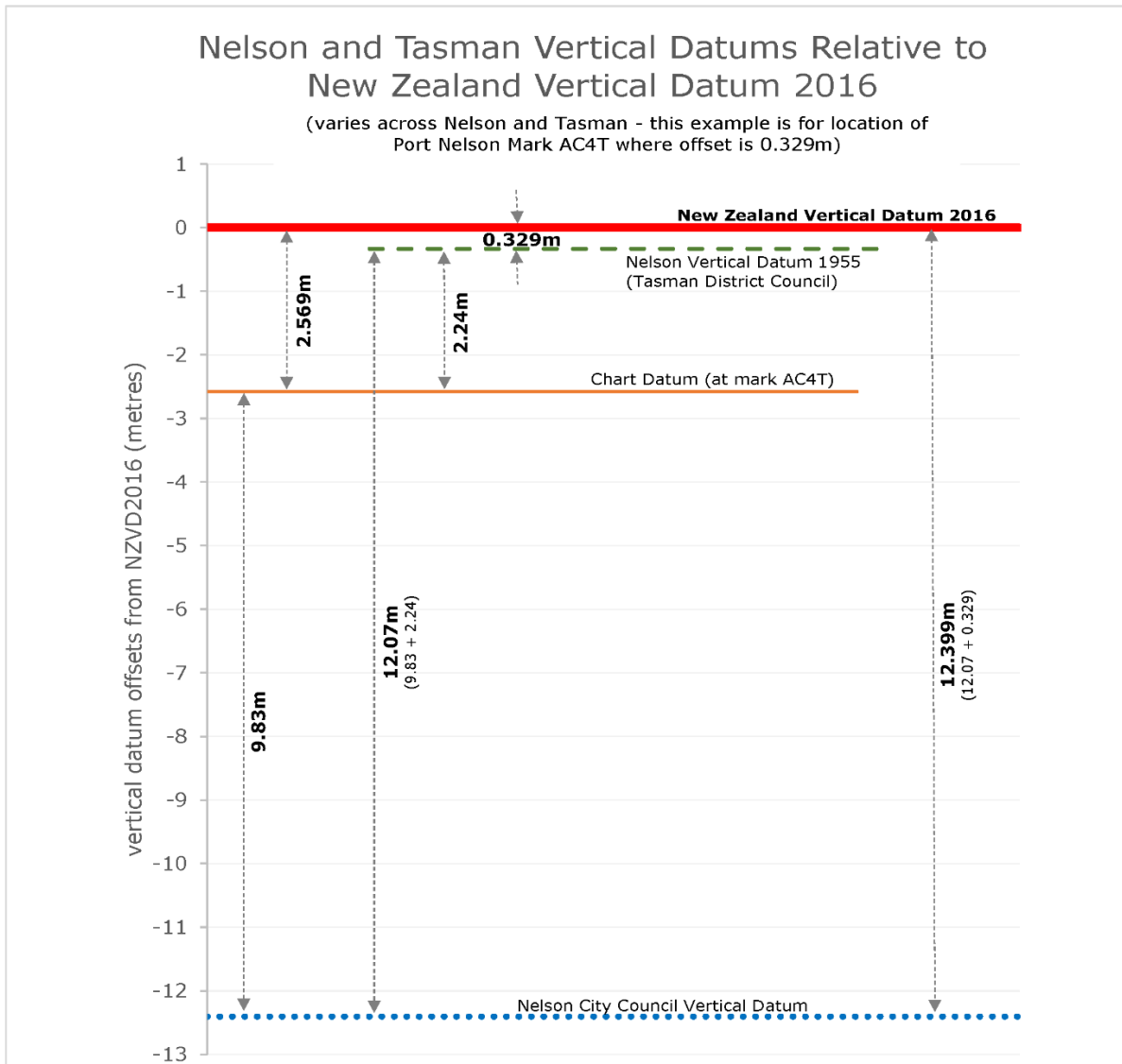
- a) The approved engineering drawings and any approved amendments, or as modified by d) below; and
- b) The Council's Land Development Manual; and
- c) Manufacturer's Instructions; and

The resource consent conditions _____ Date _____

_____	RPSurv	<input type="checkbox"/>	CPEng	<input type="checkbox"/>
(Professional Qualifications)	Practice field			
(Address) _____	Civil	<input type="checkbox"/>	Mechanical	<input type="checkbox"/>
_____	Structural	<input type="checkbox"/>	Electrical	<input type="checkbox"/>
	Geotechnical	<input type="checkbox"/>	Industrial	<input type="checkbox"/>
	Environmental	<input type="checkbox"/>		

Outstanding Works:

Appendix E Nelson and Tasman Vertical Datum's



STANDARD SYMBOLS

<u>SURVEY LINES</u>		LINEWEIGHT 0.25mm
<u>LAND BOUNDARIES</u>		CIRCLE DIA 2mm LINEWEIGHT 0.25mm
<u>NEW WATERMAINS (BLUE)</u>		LINEWEIGHT 0.50mm
<u>EXISTING WATERMAINS</u>		LINEWEIGHT 0.35mm
<u>HYDRANTS</u>		PIPE DIAMETER AT PERIODIC INTERVALS ALONG THE LINE
<u>VALVES & METERS</u>		LINEWEIGHT 0.50mm
<u>NEW SEWER (RED)</u>		LINE LENGTH 20mm
<u>EXISTING GRAVITY</u>		LINE GAP 10mm
<u>EX. SWALLOWS OR PRESSURE</u>		LINEWEIGHT 0.35/0.5mm
<u>EX. RISING OR PUMPING</u>		DIA'S 2&3mm
<u>EX. MANHOLE</u>		LINEWEIGHT 0.50mm
<u>NEW STORMWATER (GREEN)</u>		LINEWEIGHT 0.35/0.5mm
<u>EXISTING MAIN</u>		DIA'S 2&3mm
<u>EX. MANHOLE</u>		LINEWEIGHT 0.25mm
<u>OPEN DRAINS</u>		
<u>CABLES</u>		
<u>TELEPHONE</u>		LINEWEIGHT 0.35/0.5mm
		DIA 2mm
<u>ELECTRICITY</u>		LINEWEIGHT 0.25mm
		DIA 2mm
<u>KERB & CHANNEL</u>		LINEWEIGHT 0.5mm
<u>SUMPS</u>		
<u>YARD</u>		
<u>RETAINING WALLS</u>		LINEWEIGHT 0.25mm

PROVIDE SPACE ON TITLE FOR TYPICAL SIGNATURE
BLOCK MEASURING 100mmX25mm

(HEIGHT of 25mm)	(WIDTH of 100mm)	PLAN No.
		RESOURCE CONSENT No.

SITE CONTOURS 1:1000 1:500 1:250 1:200
STREETS KERB & CHANNEL AND FOOTPATHS
 PLAN 1:500 1:250 1:200
 LONGITUDINAL SECTION :
 HORIZONTAL 1:500 1:250 1:200
 VERTICAL 1:50 1:25 1:20

SOIL & STORMWATER SEWERS
 PLAN 1:500 1:250 1:200
 LONGITUDINAL SECTION :
 HORIZONTAL 1:500 1:250 1:200
 VERTICAL 1:50 1:100
 DETAILS 1:20 1:10 1:5

CROSS SECTIONS
 HORIZONTAL 1:50
 VERTICAL 1:100 1:50 1:20
 ANY VARIATION FROM THESE SCALES AS SHOWN SHALL HAVE THE PRIOR APPROVAL OF THE COUNCIL
 SHEET SIZES: A1 594mm x 841mm
 A2 420mm x 594mm

SERVICES GENERAL
 PLAN 1:500 1:250 1:200
 CROSS SECTIONS 1:50
 MAIN SHEETS REQUIRED:
 1. ROADING
 2. SEWERS-STORMWATER-KERBS
 3. WATER-TELEPHONE-POWER-KERBS

ALL INKS AND LETTERING USED SHOULD BE SUITABLE FOR SCANNING REPRODUCTION.

NELSON CITY COUNCIL GROUP MANAGER INFRASTRUCTURE, NELSON	DRAWING SYMBOLS & SCALES		
TASMAN DISTRICT COUNCIL ENGINEERING SERVICES MANAGER, TASMAN	DATE 01/07/19	NELSON - TASMAN LAND DEVELOPMENT MANUAL	201

LONGITUDINAL SECTION

ROADS

HEIGHT ABOVE NZVD 2016

OTHER LEVELS (E.G. EXISTING SERVICES)	
TOP OF KERB LEVEL R.H. SIDE	
TOP OF KERB LEVEL L.H. SIDE	
GROUND LEVEL PEG LEVEL	
HORIZONTAL DISTANCE	
GRADIENT R.H SIDE (% OR 1 IN ...)	← V.C. →
GRADIENT L.H SIDE	
HORIZONTAL CURVE	← H.C. → %S.E.

SEWER & STORMWATER

HEIGHT ABOVE NZVD 2016

OTHER LEVELS (E.G. SERVICES CROSSING THE LINE)	
HYDRAULIC GRADE LEVEL (IF APPLICABLE)	
GROUND LEVEL PEG LEVEL	
CUT (GROUND LEVEL TO INVERT)	
SEWER INVERT	
SEWER DISTANCE (TRUE HORIZONTAL DISTANCE ALONG SEWER)	
GRADIENT (% OR 1 IN ...)	
DIAMETER (MILLIMETERS INTERNAL) & PIPE TYPE/MATERIAL	

NOTES

- ALL LEVELS IN TERMS OF HEIGHT ABOVE NZVD 2016 DATUM IN METRES
- ALL DISTANCES IN METRES.
- GROUND OR PEG LEVELS SHOWN ON SECTIONS ARE TO BE THOSE ON THE LINE OF THE SEWER
- PIPELINES DESIGNED TO OPERATE UNDER PRESSURE SHALL INCLUDE THE HYDRAULIC GRADE LINE, ITS LEVELS AND GRADIENTS.
- BLOCKS MAYBE EXTENDED TO ALLOW "AS BUILT" DATA TO BE ADDED.
e.g: AS BUILT SEWER INVERT
AS BUILT DISTANCE
AS BUILT GRADIENT
- LOWEST LEVEL ON LONGITUDINAL SECTION ON LHS

COLOUR CODE

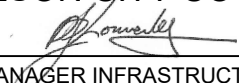
COLOUR CODE PRIMARILY FOR USE ON WHITE PAPER. ALL INKS USED SHOULD BE SUITABLE FOR DYELINE PHOTOCOPYING AND REPRODUCTION.

SYMBOL IS FOR WHEN COLOURS ARE TO BE REPRODUCED IN BLACK

COLOUR CODE FOR EARTHWORKS IN SECTION

FILLING	GREEN	SYMBOL =	
CUTTING	RED	SYMBOL =	
REPLACEMENT GRAVEL	BROWN	SYMBOL =	
BASECOURSE	BLUE	SYMBOL =	
EARTH (TOPSOIL)		SYMBOL =	

NELSON CITY COUNCIL


GROUP MANAGER INFRASTRUCTURE, NELSON

DRAWING STANDARDS & SYMBOLS

TASMAN DISTRICT COUNCIL


ENGINEERING SERVICES MANAGER, TASMAN

DATE

01/07/19

NELSON - TASMAN
LAND DEVELOPMENT MANUAL

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